WHAT IS CLAIMED IS:

1. A solid semiconductor element disposed in contact with a liquid, comprising:

information acquiring means for acquiring chemical property information of said liquid, including at least one of a hydrogen ion concentration index, a concentration, and a density of said liquid;

information communication means for displaying or transmitting the information acquired by said information acquiring means to the outside; and

energy converting means for converting an energy applied from the outside to an energy of a type different from the type of said applied energy to operate said information acquiring means and said information tramsission means.

2. The solid semiconductor element according to claim 1, further comprising:

information storing means for storing information to be compared with said acquired information; and discrimination means for comparing said acquired information with the corresponding information stored in said information storing means, and discriminating a need for transmission of the information to the outside,

wherein said information communicating means displays or transmits said acquired information to the

outside, when said discrimination means discriminates the need for the information transmission, and

said information storing means and said discrimination means are operated by the energy converted by said energy converting means.

3. The solid semiconductor element according to claim 1, further comprising:

information storing means for storing the information to be compared with said acquired information;

receiving means for receiving a signal from the outside; and

discrimination means for allowing said information acquiring means to acquire the information about the liquid contained in said container in response to the signal received by said receiving means, comparing said acquired information with the corresponding information stored in said information storing means, and judging whether or not said acquired information meets a predetermined condition,

wherein said information communicating means displays or transmits at least a discrimination result obtained by said discrimination means to the outside, and

said information storing means, said receiving means, and said discrimination means are operated by

the energy converted by said energy converting means.

4. The solid semiconductor element according to claim 1 wherein said energy converting means comprises an oscillation circuit for generating a power by an induced electromotive force by electromagnetic induction with a resonance circuit disposed outside.

5. The solid semiconductor element according to claim 4 wherein the information about said liquid is given by a change of an output from said oscillation circuit.

6. The solid semiconductor element according to claim 1 which is floated and disposed on a liquid surface or in the liquid, and which has a hollow portion for floating on said liquid surface or in the liquid.

7. The solid semiconductor element according to claim 6 which is disposed in a container with the liquid contained therein, and wherein said information acquiring means comprises means for detecting a residual amount of the liquid in said container.

8. The solid semiconductor element according to claim 1 wherein said information acquiring means

comprises means for detecting an ion concentration of the liquid.

9. The solid semiconductor element according to claim 8, wherein said information acquiring means comprises an ion sensor.

10. The solid semiconductor element according to claim 8, wherein said information acquiring means comprises an ion selective field effect transistor.

11. An ink tank which contains an ink to be supplied to an ejection head for ejecting the ink, wherein at least one solid semiconductor element according to claim 1, is arranged in contact with the ink.

12. An ink tank according to claim 11, wherein said solid semiconductor element is floated and disposed on an ink surface or in an ink, and said information acquiring means comprises means for detecting an ink residual amount.

13. The ink tank according to claim 11, wherein said information acquiring means comprises means for detecting an ion concentration of the ink.

14. The ink tank according to claim 13, wherein said information acquiring means comprises an ion sensor.

15. The ink tank according to claim 13, wherein said information acquiring means comprises an ion selective field effect transistor.

16. An ink tank which contains an ink to be supplied to an ejection head for ejecting the ink, comprising:

information acquiring means for acquiring chemical property information of said ink, including at least one of a hydrogen ion concentration index, a concentration, and a density of said ink;

information communicating means for displaying or transmitting the information acquired by said information acquiring means to the outside; and

energy converting means for converting an energy applied from the outside to an energy of a type different from the type of said applied energy to operate said information acquiring means and said information communicating means.

17. The ink tank according to claim 16, further comprising:

information storing means for storing information

to be compared with said acquired information; and discrimination means for comparing said acquired information with the corresponding information stored in said information storing means, and discriminating a need for transmission of the information to the outside,

wherein said information communicating means displays or transmits said acquired information to the outside, when said discrimination means discriminates the need for the information transmission, and

said information storing means and said discrimination means are operated by the energy converted by said energy converting means.

18. The ink tank according to claim 16, further comprising:

information storing means for storing the information to be compared with said acquired information;

receiving means for receiving a signal from the outside; and

discrimination means for allowing said information acquiring means to acquire the information about said ink in response to the signal received by said receiving means, comparing said acquired information with the corresponding information stored in said information storing means, and judging whether or not

said acquired information meets a predetermined condition,

wherein said information communicating means displays or transmits at least a discrimination result obtained by said discrimination means to the outside, and

said information storing means, said receiving means, and said discrimination means are operated by the energy converted by said energy converting means.

19. The ink tank according to claim 16, wherein said energy converting means comprises an oscillation circuit for generating a power by an induced electromotive force by electromagnetic induction with a resonance circuit disposed outside.

20. The ink tank according to claim 19, wherein the information about said ink is given by a change of an output from said oscillation circuit.

21. An ink jet recording apparatus comprising: an ejection head for ejecting an ink; and the ink tank according to any one of claims 11 to 20, in which the ink to be supplied to said ejection head is contained.

22. A liquid change information acquiring method of using a solid semiconductor element disposed in

contact with a liquid, said element comprising:

information acquiring means for acquiring information about the liquid;

information communicating means for displaying or transmitting the information acquired by said information acquiring means to the outside; and

energy converting means for converting an energy applied from the outside to an energy of a type different from the type of said applied energy to operate said information acquiring means and said information communicating means.

23. The information acquiring method according to claim 22, wherein said information acquiring means acquires change information of a liquid chemical property including at least one of a hydrogen ion concentration index, a concentration, and a density of the liquid.

24. A liquid physical property change discriminating method of using a solid semiconductor element disposed in contact with a liquid, the element comprising:

information acquiring means for acquiring information about the liquid;

discrimination means for discriminating a liquid physical property change based on the information

acquired by said information acquiring means and a pre-stored data table;

information communicating means for displaying or transmitting the information acquired by said discrimination means to the outside; and

energy converting means for converting an energy applied from the outside to an energy of a type different from the type of said applied energy to operate said information acquiring means, said discrimination means and said information communicating means.

25. The discriminating method according to claim 24, wherein said information acquiring means acquires the change information of the chemical property of the liquid, estimates a change of a physical property value of the liquid from the change information of the chemical property of said liquid and said data table, and discriminates a need for information transmission.

26. The discriminating method according to claim 25, wherein the change information of the chemical property of said liquid includes at least one of a hydrogen ion concentration index, a concentration, and a density of the liquid.

27. The discriminating method according to claim

25, wherein the physical property of said liquid includes at least one of a viscosity, and a surface tension of the liquid.

28. The discriminating method according to claim 24, wherein said discrimination means compares the information acquired by said information acquiring means with said pre-stored data table, and discriminates the need for information transmission.

29. A discriminating method of acquiring information about a liquid with time, and estimating a change amount of the liquid from information indicating a change of the information about said liquid with time,

said method comprising steps of discriminating abnormal change information about said liquid.

30. A solid semiconductor element comprising:

receiving and energy converting means for receiving a signal of an electromagnetic wave from the outside in a non-contact manner, and converting the electromagnetic wave to a power by electromagnetic induction;

information acquiring means for acquiring outside environmental information;

information storing means for storing information to be compared with the information acquired by said

information acquiring means;

discrimination means for comparing the information acquired by said information acquiring means with the corresponding information stored in said information storing means, and discriminating a need for information transmission when the signal of the electromagnetic wave received by said receiving and energy converting means satisfies a predetermined response condition; and information communicating means for displaying or transmitting the information acquired by said information acquiring means to the outside when said discrimination means discriminates the need for the information transmission,

wherein said information acquiring means, said information storing means, said discrimination means, and said information communicating means are operated by the power converted by said receiving and energy converting means.

31. The solid semiconductor element according to claim 30, wherein said response condition comprises an electromagnetic induction frequency.

32. The solid semiconductor element according to claim 30, wherein said response condition comprises a communication protocol.

33. The solid semiconductor element according to claim 30, wherein said information communicating means converts the power converted by said receiving and energy converting means to a magnetic field, a light, a shape, a color, a radio wave, or a sound as the energy for displaying or transmitting the information to said outside.

34. The solid semiconductor element according to claim 30, wherein said receiving and energy converting means comprises a conductor coil and an oscillation circuit for generating the power by electromagnetic induction with an outside resonance circuit.

35. The solid semiconductor element according to claim 34, wherein said conductor coil is formed to be wound around an outer surface of the solid semiconductor element.

36. The solid semiconductor element according to claim 30, comprising a hollow portion for floating on a liquid surface or in a predetermined position in the liquid.

37. The solid semiconductor element according to claim 36, wherein a gravity center of the solid semiconductor element floating in the liquid is

positioned below a center of the element, and the floating element rocks stabily without rotating in the liquid.

38. The solid semiconductor element according to claim 37, wherein a metacenter of the solid semiconductor element is constantly positioned above the gravity center of the solid semiconductor element.

39. An ink tank in which at least one of solid semiconductor elements according to any one of claims 30 to 38 is disposed.

40. The ink tank according to claim 39, wherein a response condition of said solid semiconductor element differs with an ink in the tank.

41. The ink tank according to claim 40, wherein the response condition of said solid semiconductor element differs with an ink color in the tank.

42. The ink tank according to claim 40, wherein the response condition of said solid semiconductor element differs with a color material concentration of the ink in the tank.

43. The ink tank according to claim 40, wherein

the response condition of said solid semiconductor element differs with an ink property of the ink in the tank.

44. An ink jet recording apparatus in which a plurality of ink tanks according to claim 39, are disposed.

45. The ink jet recording apparatus according to claim 44, further comprising communication means for transmitting/receiving an electromagnetic wave with respect to the solid semiconductor element in each ink tank.

46. The ink jet recording apparatus according to claim 45, wherein said communication means comprises a resonance circuit for emitting the electromagnetic wave.

47. A communication system in which a solid semiconductor element is used, comprising:

a plurality of liquid containers in which said respective solid semiconductor elements are disposed;

an oscillation circuit formed in said solid semiconductor element and provided with a conductor coil;

information acquiring means for acquiring the

information in said container;

receiving means for receiving a signal from the outside;

information communicating means for transmitting the information to the outside when a predetermined response condition is satisfied;

an outside resonance circuit, disposed outside said plurality of liquid containers, for generating a power with respect to the oscillation circuit of said solid semiconductor element by electromagnetic induction; and

outside communication means for bidirectionally communicating with said receiving means and said information communicating means of said solid semiconductor element.

48. The communication system according to claim 47, wherein said response condition differs with each container.

49. The communication system according to claim 48, wherein said response condition comprises an electromagnetic induction frequency.

50. The communication system according to claim 48, wherein said response condition comprises a communication protocol.

51. The communication system according to claim 47, wherein a gravity center of the solid semiconductor element floating in the liquid is positioned below a center of the element, and the floating element rocks stabily without rotating in the liquid.

52. The communication system according to claim 51, wherein a metacenter of the solid semiconductor element is constantly positioned above the gravity center of the solid semiconductor element.

53. A liquid container in which an ink to be supplied to a liquid ejection head for ejecting a liquid droplet is contained, comprising:

a first chamber which is partially connected to atmosphere and in which an absorber for absorbing a liquid is contained;

a second chamber which is closed from the outside and in which said liquid is contained;

a connection path, disposed in the vicinity of a bottom portion of the container, for connecting said first chamber to said second chamber;

a supply port which is disposed in said first chamber, and via which the liquid is supplied to said liquid ejection head;

first monitor means, disposed in said first chamber, for monitoring a liquid amount of said first

chamber; and

a flow rate adjustment apparatus, disposed in said connection path, for adjusting a flow rate of said connection path in accordance with information from the first monitor means.

54. The liquid container according to claim 53, wherein second monitor means for monitoring the liquid amount of said second chamber is disposed in said second chamber, and said flow rate adjustment apparatus is controlled in accordance with the information from the second monitor means.

55. The liquid container according to claim 53, wherein said first monitor means comprises a first solid semiconductor element comprising: at least pressure detection means for detecting a pressure fluctuation of the liquid; information communicating means for transmitting pressure information obtained by the pressure detection means to said flow rate adjustment apparatus; and energy converting means for converting an energy applied from the outside to an energy different from said applied energy to operate said pressure detection means and said information communicating means.

56. The liquid container according to claim 55,

wherein said first solid semiconductor element is disposed above a liquid surface of said first chamber when a liquid supply to said first chamber from said second chamber is possibly interrupted, and in a position in which a pressure fluctuation can be detected.

57. The liquid container according to claim 55, wherein said flow rate adjustment apparatus is a second solid semiconductor element comprising: at least receiving means for receiving the pressure information from said first monitor means; an open/close valve which operates in response to said received pressure information; and energy converting means for converting an energy applied from the outside to an energy different from said applied energy to operate said receiving means and said open/close valve.

58. The liquid container according to claim 53, wherein said second monitor means is a third solid semiconductor element comprising: at least residual amount detection means for detecting a liquid residual amount; information communicating means for transmitting residual amount information obtained by the residual amount detection means to said flow rate adjustment apparatus; and energy converting means for converting an energy applied from the outside to an

energy different from said applied energy to operate said residual amount detection means and said information communicating means.

59. The liquid container according to claim 58, wherein said solid semiconductor element floats on a liquid surface or in the liquid.

60. A liquid ejection recording apparatus comprising: a liquid ejection head for ejecting a recording liquid droplet; and the liquid container according to any one of claims 53 to 59 in which the liquid to be supplied to the liquid ejection head is contained.

61. The liquid ejection recording apparatus wherein said liquid ejection head utilizes a film boiling caused when the heat energy is applied to the liquid to eject the liquid droplet via a nozzle.